ORDER

6340.23

PROJECT IMPLEMENTATION PLAN
FOR THE AIR ROUTE SURVEILLANCE RADAR MODEL 4
(ARSR-4)

June 6, 1990

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

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FOREWORD

This program implementation plan (PIP) identifies all activities, schedules, technical direction, and funding required/available to implement the Air Route Surveillance Radar Model 4 (ARSR-4) Procurement Program under the aegis of the FAA/Air Force Radar Replacement (FARR) Program.

FAA, en route air traffic control surveillance throughout the United States requires two dimensional, target surface reflected, azimuth and range information from the search radar; and target identification, range, and azimuth information from the beacon radar. U.S. Air Force air sovereignty surveillance against air breathing threats for the North American continent requires three dimensional; target surface reflected; azimuth, range, and height information from the search radar; and target identification, i.e., Identification Friend or Foe (IFF), range, and azimuth information from the beacon radar.

The FARR Program is procuring long-range, state-of-the-art radar systems to replace aging long-range search and height-finding radars. The new radar systems will provide three-dimensional digital data on aircraft within a 250 nautical mile radius centered upon the radar at altitudes up to 100,000 feet above mean sea level.

The primary objectives of this program are to:

(1) Replace obsolescent equipment.

(2) Reduce FAA and USAF maintenance costs.

(3) Reduce USAF operations costs.

(4) Improve availability of spare parts.

(5) Increase radar coverage.

(6) Improve target detection.

(7) Improve radar data quality and throughput response time.

(8) Improve weather detection and presentation.

(9) Improve Electronic Counter-Counter Measures (ECCM) capabilities.

Thirty-six of the ARSR-4 radar systems will replace existing joint-use radars in the coastal and border regions of the 48 contiguous states. One system will be replaced in Hawaii, and one system will be replaced in Guam.

One system will be installed at the Mike Monroney Aeronautical Center. In addition, one system will be procured for installation at Mt. Kokee in Hawaii and three systems are being procured for the U.S. Navy. This PIP does not address the Navy systems.

Carey L. Weigel
Program Director for Surveillance

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CHAPTER 1. GENERAL

1. PURPOSE. This project implementation plan (PIP) identifies the activities, schedules, technical direction, and funding required/available to implement the Air Route Surveillance Radar Model 4 (ARSR-4) Procurement Program.

2. DISTRIBUTION. This order is distributed to the branch level in the office of the Program Director for Surveillance, Flight Standards Service, Systems Maintenance Service, Logistics Service, Office of Aviation Policy and Plans, and the Air Traffic Plans and Requirements Service; to the branch level at the FAA Technical Center and the Mike Monroney Aeronautical Center; and to the branch level in the regional Airway Facilities, Logistics, Air Traffic, and Flight Standards divisions. Distribution is also made in the USAF to the Alaskan Air Command, Air Force Communications Command, Air Force Logistics Command, Air Force Operational Test and Evaluation Center, Air Force Systems Command, Air Force Space Command, Air Training Command, Electronic Security Service, Pacific Air Force, North American Air Defense Command, Tactical Air Command, Headquarters Air Force, and the National Guard Bureau.

3. AUTHORITY TO CHANGE THIS ORDER. The Program Director for Surveillance (ANR-1) is the approval authority for all changes to this order.

4. REQUESTS FOR INFORMATION. If further information or clarification is required, contact the FAA Air Force Radar Replacement (FARR) (ARSR-4) program office, ANR-140, at (202) 646-5630 [Commercial] or 967-5630 [FTS].

5.-19. RESERVED.

CHAPTER 2. PROJECT OVERVIEW

20. SYNOPSIS. The FAA/Air Force Radar Replacement (FARR) Program is procuring long-range, state-of-the-art radar systems to replace aging long-range search and height-finding radars (HFR). The new radar systems will provide three-dimensional digital data on aircraft within a 250 nautical mile radius centered upon the radar at altitudes up to 100,000 feet above mean sea level.

21. PURPOSE.

a. The FAA and USAF are procuring 39 radar systems for joint use. Thirty-six of these radar systems will replace existing joint-use radars in the coastal and border regions of the 48 contiguous states. One system will be replaced in Hawaii and one system will be replaced in Guam. One system will be installed at the Mike Monroney Aeronautical Center. In addition, one system will be procured for installation at Mt. Kokee in Hawaii and three systems are being procured for the U.S. Navy (USN). This PIP does not address the Navy systems.

b. Most of the radars being replaced are 1950's/1960's vintage equipments that require extensive manpower and increasingly hard to get vacuum tubes and other parts needed for maintenance and operation. Also, in order to provide a three-dimensional capability with a single radar; vintage 1973, ARSR-3 radars will be replaced at 10 locations. The new radar will include solid-state electronics and will operate without onsite operation and maintenance personnel. Operational data will automatically be sent to remote FAA and USAF facilities. Radar performance and maintenance will be remotely monitored via data link to a service center. If a failure occurs, technicians will be dispatched from the service center to repair the system.

c. The primary objectives of this program are to:

(1) Replace obsolescent equipment.

(2) Reduce FAA and USAF maintenance costs.

(3) Reduce USAF operations costs.

(4) Improve availability of spare parts.

(5) Increase radar coverage.

(6) Improve target detection.

(7) Improve radar data quality and throughput response time.

(8) Improve weather detection and presentation.

(9) Improve Electronic Counter-Counter Measures (ECCM) capabilities.

22. HISTORICAL INFORMATION.

a. An FAA system requirements study conducted in July 1978, determined that FAA's vacuum tube, long-range radars were nearing the end of their design life expectancy and required replacement with a modern solid-state radar. Replacement of the vacuum-tube radars was approved in Order 1811.5, System Requirements Statement/Acquisition Authorization for Replacement of ARSR-1 and 2 and FPS-20 and 60 Radar Systems, dated April 22, 1980.

b. The development of the FAA National Airspace System (NAS) Plan in 1981 reopened the FAA long-range radar replacement program for review. New guidelines were established, and an extensive radar coverage study was undertaken. Subsequently, the USAF formally requested the FAA to consider a three-dimensional radar as a replacement at sites used jointly by the two agencies. This three-dimensional approach to the joint-use radar replacement program was addressed in the December 1981 version of the NAS Plan.

c. An Engineering SubGroup (ESG) of the Joint Radar Planning Group (JRPG) met in April 1982 to consider the best approach to meeting the mission's need as outlined in the NAS Plan. The ESG report, issued in July 1983, concluded that although none of the existing or proposed three-dimensional radars that were evaluated by the group met all of the joint operational requirements, technology existed with little risk to build a radar that could satisfy the joint-use needs.

d. A Department of Transportation/Department of the Air Force Memorandum of Agreement, signed on November 19, 1984, established a joint program office and designated the FAA as the acquisition agency for a three-dimensional radar to be designated as the ARSR-4.

e. A project master plan, which outlines the overall approach to the ARSR-4's acquisition, was approved in March 1987.

f. The key decision memoranda, which authorizes the production buy of the ARSR-4, was signed by the Deputy Secretary of Transportation in August 1987.

g. A contract for the production and delivery of 33 joint-use plus one USN, ARSR-4 radars was signed with Westinghouse Electric Corporation on July 22, 1988. The contract includes an option for six additional joint-use radars that are part of the replacement program. This option was provided in order to accommodate USAF funding in a sixth contract year. The contract also includes a further option for 12 ARSR-4's to accommodate future Government needs. Two radars for USN and one radar for Mt. Kokee have been added to the contract under the 12 radar option. This PIP addresses the 39 joint-use replacement radars and the Mt. Kokee radar.

23.-29. RESERVED.

CHAPTER 3. PROJECT DESCRIPTION

30. FUNCTIONAL DESCRIPTION. En route air traffic surveillance throughout the United States requires two dimensional, target surface reflected, azimuth and range information from the search radar; and target identification, range, and azimuth information from the beacon radar. USAF air sovereignty surveillance against air breathing threats for the United States requires three dimensional; target surface reflected; azimuth, range, and height information from the search radar; and target identification, i.e., Identification Friend or Foe (IFF), range, and azimuth information from the beacon radar.

a. Search Coverage. The ARSR-4 will detect and report targets through 360 degrees in azimuth. The slant range coverage will be from 5 to 250 nm and the elevation coverage will be to 100,000 feet MSL and from -7 to +30 degrees with reference to a zero degree radar horizontal. Coverage at lookdown angles (+0.2 to -7 degrees) will be site selectable.

b. Height Coverage. The ARSR-4 will produce height reports on targets through 360 degrees in azimuth and from 5 to 250 nm in range. The elevation reporting coverage will be from at least -1.0 (for high sited radars)/+0.2 (for low sited radars) to 20 degrees above the horizontal. Height of targets outside the -1.0/+0.2 to 20 degrees envelope (-7 to -1.0/+0.2 and +20 to +30 degrees) will be reported and flagged as an invalid height report. The altitude coverage will extend to 100,000 feet mean sea level.

c. Radar Target Capacity. The ARSR-4 will be operated in an air traffic environment with wide variations in aircraft population with the distribution of that population as indicated in subparagraphs (1)-(5). The number of aircraft, not including false reports, may vary from zero to the maximum listed as a function of time or antenna azimuth or both.

(1) Steady-state maximum: 800 aircraft returns within the primary radar coverage.

(2) Large sector peak: 50 aircraft returns in each of eight contiguous 11.25 degree sectors.

(3) Small sector peak: 20 aircraft returns in each of three contiguous 1.2 degree sectors.

(4) Azimuth peak: 60 aircraft returns aligned in an azimuth radial (could be in one elevation beam).

(5) Range distribution peak: 4 aircraft returns within 4.5 nm interval (excluding the 0 to 5 nm range interval from the site) not equally spaced.

d. Primary Radar Accuracy. The following range, azimuth and height accuracies apply to all targets achieving a probability of detection (Pd) of 0.8 or greater. During the frequency-hopping mode of operation, these accuracies do not apply to targets competing with clutter, but do apply to targets in the clear environment.

(1) Range Accuracy. Within the primary radar coverage to 250 nm, the ARSR-4 system will provide single scan range surveillance information which is accurate to 1/16 nm [root-mean-squared (rms) values including all bias and jitter errors].

(2) Azimuth Accuracy. Within the primary radar coverage, the ARSR-4 will provide single scan azimuth surveillance information which is accurate to 0.176 [2 azimuth change pulses (ACP)] degree (rms values including all bias and jitter errors).

(3) Height Accuracy. Between 5 and 175 nm on a $2.2m^2$ target, all height errors measured (on a single scan basis) in any 5 nm interval will be within 3,000 feet rms (including all bias and jitter errors) of the target's true altitude. No height accuracy is required on height reporting outside the -1.0/+0.2 to +20 degree height detection envelope. At ranges beyond 175 nm the height accuracy will not decay beyond that expected due to signal-to-noise ratio reduction and the angular spread.

[NOTE: The height accuracy requirement for the ARSR-4 was provided by the USAF as being 5,000 feet 90 percent of the time. When converted to engineering terms (rms), and assuming height errors follow a normal distribution, the height accuracy translates to 3,000 feet (rms).]

e. Primary Radar Resolution. Over the entire detection envelope, the ARSR-4 shall resolve two targets when separated by 0.125 (1/8) nautical miles in range and on the same azimuth or when separated by 2.0 degrees in azimuth at the same range.

f. Primary Radar Frequency. The radar will be capable of operating and meeting all specified requirements over the entire frequency range of 1215 to 1400 MHz.

g. Weather Data Output. A weather data processing function will provide three out of five threshold levels of weather contour data for air traffic control use and an analog weather data output for the radar remote weather display system (RRWDS). Weather data will be reported out from the ARSR-4 in range and azimuth. Weather reports will not be outputted stratified in elevation.

h. Remote Monitoring Subsystem (RMS). A subsystem of the remote maintenance monitoring system (RMMS) will be a functional part of the radar to enable remote monitoring and control of all necessary and applicable functions of the radar equipment. This subsystem is called the RMS. The RMS will be embedded in the radar and will have the following operational capabilities necessary for unattended operation:

(1) Monitor and alarm.

(2) Remote control.

(3) Performance certification.

(4) Diagnostics.

(5) Remote (field) adjustment and selection.

i. Beacon System Performance. The beacon target processor (BTP) will be capable of operation when the dedicated ARSR-4 primary radar is "OFF," or has failed in any form, allowing the beacon-only target data to be provided to the users. With the exception of antenna rotation failure, no single failure will cause the loss of both primary and beacon data. Additionally, Mode 4 equipment will be provided.

31. PHYSICAL DESCRIPTION. The primary ARSR-4 equipment will include four 36 inches wide by 30 inches deep by 78.5 inches high cabinets, a mobile (at least 12 feet laterally in front of the cabinets) local display console that is 60 inches wide by 48 inches deep by 60 inches high, an antenna that includes a reflector that is 42 feet wide and 32.5 feet high with a 24 row antenna array feed that is about 16.6 feet wide and 12 feet high. In addition, the ARSR-4 equipment will include an antenna pedestal and rotary joint and an 18 foot by 15 foot equipment room located immediately below the antenna. The equipment room will contain the radar transmitter and the rf receiver as well as supporting handling and maintenance equipment. The ARSR-4 equipment will be installed in an equipment building and on an antenna tower.

a. ARSR-4 Towers. Either new or existing towers will be utilized according to the site type as explained in section 7. New tower structures are designed in two parts; the basic tower and extensions. The basic tower has four legs and is 25 feet in height. Each extension is 12.5 feet in height. The tower legs are vertical so that individual extensions can be stacked to meet tower height requirements up to a maximum of 75 feet measured from the tower base to the antenna deck. Tower legs are approximately 36 feet apart. Both new and existing towers will be fitted with a new 56 foot diameter radome and mounting ring which will be provided by the contractor.

b. ARSR-4 Buildings. Existing buildings will be used at ARSR-1/2/3 sites. Use of existing buildings at other sites will depend largely on the decision reached on the use of the existing tower at those sites. Where a new building is required, either a concrete block or metal prefab building of standard design, modified as required on a site-by-site basis, will be used. The new building internal dimensions are approximately 68 feet by 26.6 feet

c. Auxiliary Equipments. The ARSR-4 building also houses auxiliary equipment that includes USAF radios and all equipments necessary to support the internal and external interfaces shown in paragraph 33.

32. SYSTEMS REQUIREMENTS. At most sites the ARSR-4 can be installed within the existing site perimeter. At a few locations, some extension of the site perimeter may be necessary in order to install ground-air-ground (GAG) radio antenna poles or to optimally locate a new tower. At many locations the removal of the HFR tower, the existing search radar tower, and auxiliary buildings concomitant to installation of the ARSR-4 will permit the site perimeter to be decreased. Final dimensions of each site must consider space for the installation of antenna poles to support USAF radio antennas and other antenna mountings that may be appropriate to specific sites.

a. Primary/Emergency Power. The ARSR-4 will normally operate from a commercial prime power source of three phase, four wire, AC, 60 Hz, 208V power. In case of failure of the prime power source, power from an auxiliary engine-generator will be automatically connected to furnish power to the equipment within 15 seconds. At most sites the existing engine-generator will be adequate. At relocated sites and at existing sites where the engine generator is not adequate or is otherwise not acceptable, a new generator will be required.

b. Grounding. Requirements for grounding, shielding, bonding, and transient protection will be as specified in FAA-STD-020, Lightning Protection, Grounding, Bonding and Shielding Requirements for Equipment. The Government will provide the building facility grounding system. The contractor will provide all grounding connections to the facility grounding system in accordance with FAA-STD-019, Lightning Protection, Grounding, Bonding and Shielding Requirements for Facilities and FAA-STD-020. The design of the facility grounding system will be shown in the Site Modification Drawing Package (SMDP).

c. Site Security. The ARSR-4 is designed to be unattended. Site security requirements will be as specified in the DOT Security Manual for unattended sites. Specific security requirements are discussed in section 10.

33. INTERFACES. All applicable interface control documentation is identified in the Statement of Work (SOW) and the data flow diagrams are contained in the subsystem specification for the ARSR-4 radar system, prepared by the contractor and delivered as part of the contract data requirements. All ARSR-4 interfaces are detailed in FAA Specification, FAA-E-2763b, ARSR-4 Radar System. The ARSR-4 will operate compatibly with the following:

a. Air Traffic Control Beacon Interrogator (ATCBI-5).

b. Modems.

c. Mode S.

d. Air Traffic Control.

e. RRWDS.

f. Air Route Traffic Control Center (ARTCC)/Area Control Facility (ACF).

g. Mode 4.

h. Mike Monroney Aeronautical Center.

i. RMMS/RMS.

j. Sector Operational Control Center (SOCC)/Regional Operational Control Center (ROCC) Software Support Facility (RSSF).

34.-39. RESERVED.

CHAPTER 4. PROJECT SCHEDULES AND GENERAL STATUS

40. MILESTONE SCHEDULE SUMMARY. Figure 4-1 depicts the detailed project schedule. Significant events are summarized as follows:

a.	Contract Award	July 22, 1988
b.	Preliminary Design Review (PDR)	Aug 89
c.	Critical Design Review (CDR)	Jan 90
d.	Deployment Readiness Review	Aug 91
e.	First system delivered	Nov 91
f.	First system fully operational	Nov 92
g.	Last system delivered	Aug 94
h.	Last system fully operational	Oct 94

41. INTERDEPENDENCIES AND SEQUENCE. The FARR Program is not dependent on other NAS Plan projects for implementation.

42.-49. RESERVED.

FIGURE 4-1. ARSR-4 PROJECT SCHEDULE

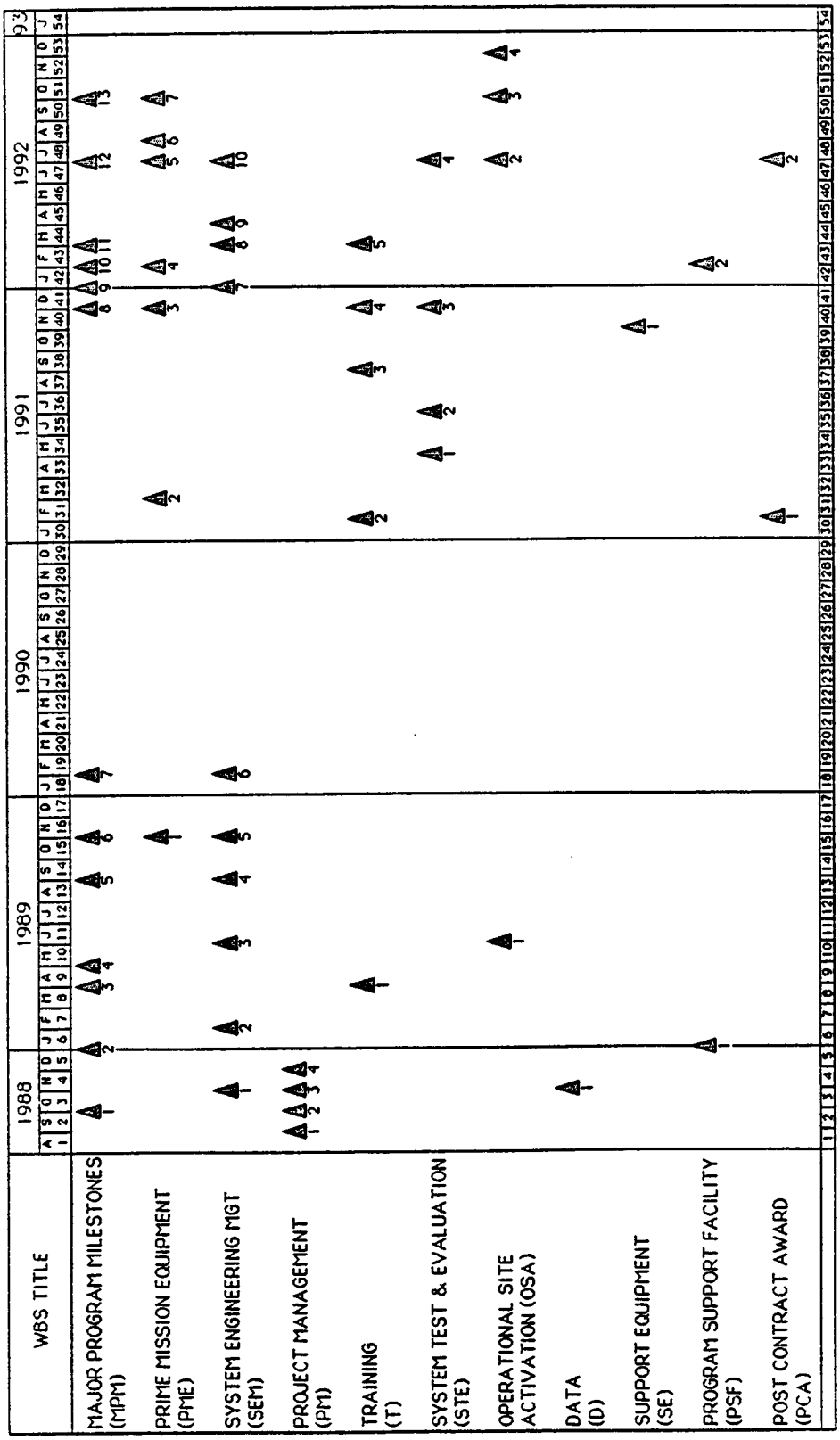


FIGURE 4-1 (CONT). ARSR-4 PROJECT SCHEDULE NOTES

MPM - 1. System Requirements Review
2. System Design Review
3. Software Specification Review
4. Hardware Preliminary Design Review
5. Software Preliminary Design Review
6. Hardware Critical Design Review
7. Software Critical Design Review
8. Phase I Qualification Test & Evaluation
9. Functional Configuration Audits
10. Deliver System #1
11. Physical Configuration Audits
12. Phase II Qualification Test & Evaluation
13. Deliver System #2

PME - 1. Mock-ups
2. Subsystem Tests
3. Deliver System #3
4. Deliver System #1
5. Deliver System #4
6. Deliver System #6
7. Deliver System #2

SEM - 1. System Engineering Management Plan
2. System Specification
3. Hardware B-Specifications
4. Software B-Specifications
5. Hardware C-Specifications
6. Software C-Specifications
7. Functional Configuration Audits
8. Physical Configuration Audits
9. Formal Qualification Review
10. Phase II Qualification Test & Evaluation

PM - 1. Program Management Schedule
2. Contract Work Breakdown Structure
3. Program Management Status Report
4. Program Management Plan

T - 1. Option
2. Task Analysis
3. Training Courses
4. Training Data
5. First Course

STE - 1. Hardware/Software Integration Testing
2. Software Performance Qualification Testing
3. Phase I Qualification Test & Evaluation
4. Phase II Qualification Test & Evaluation

OSA - 1. Site Preparation & Installation Report
2. Field Acceptance Systems 1&3
3. Field Acceptance System #4
4. Field Acceptance System #2

D - 1. Contract Data Management Plan

SE - 1. System #1 Test

PSF - 1. Delivered to Westinghouse
2. Delivered to Federal Aviation Administration

PCA - 1. Option
2. Option Delivered

CHAPTER 5. PROJECT MANAGEMENT

50. PROGRAM MANAGEMENT, GENERAL.

a. The FARR Program Manager's responsibility, authority, and accountability is documented in the approved Program Manager's charter dated September 27, 1985.

b. The FAA and USAF have established a joint program office that is located at FAA headquarters for management of this program, with the FAA designated as the lead agency. The FAA program manager is responsible for the management and direction of all program activities to implement the new radar system. The USAF has provided a deputy program manager to assist the FAA program manager in all functions and responsibilities. The program office is staffed by both FAA and USAF personnel with additional support provided by Martin Marietta Corporation (the FAA's System Engineering and Integration (SEI) contractor) and Horizons Technology, Incorporated (HTI) (the USAF's FARR Program support contractor). Additional support is provided by the Mitre Corporation. The program office organization is depicted in the Program Manager's Charter.

51. PROGRAM CONTACTS. The following individuals are the prime contacts for the FARR Program.

Name/Title	Address
Richard J. Lay Program Manager	FAA, ANR-140 800 Independence Ave. SW Washington, D.C. 20591 (202) 646-5630 FTS 967-5630
William D. Syptak, Lt. Col., USAF Deputy Program Manager	FAA, ANR-141 800 Independence Ave. SW Washington, D.C. 20591 (202) 646-5624 FTS 967-5624

52. PROGRAM COORDINATION. Coordination on the various aspects of this program involve organizations in the FAA and USAF as listed in paragraph 56 of the Project Master Plan for the FARR Program. Coordination includes:

a. Program Management Reviews (PMR). These meetings are scheduled monthly with the contractor and will include:

(1) Program Status Summary.
(2) Review of PMR Action Items.
(3) Schedule and Milestone Review.
(4) Technical/Progress/Problems.
(5) Risk Review.
(6) Configuration Review.
(7) Manufacturing Status.

(8) Subcontractors Status.
(9) Life-Cycle Cost Status.

b. Periodic program status meetings will be held internally by the program office to provide for general progress reporting, discussion and resolution of problems, requests for information, and policy notification on a direct face-to-face basis.

c. A number of working groups have been established to expedite the preparation of various management, technical, and test plans. These groups include FAA and USAF personnel as well as technical representatives from the ARSR-4 prime contractor, Martin Marietta Corp., HTI, and other contractors on an as-required basis. The working groups are as follows:

(1) Test Planning Working Group (TPWG) [Includes Test Support Group (TSG)].

(2) National Airspace Integrated Logistics Support Management Team (NAILSMT).

(3) Interface Control Working Group (ICWG).

(4) Software Working Group.

d. The program office will establish a configuration management system in accordance with procedures in Order 1800.8E, National Airspace System Configuration Management, and FAA-STD-021, Configuration Management (Contractor Requirements). This system will ensure that configuration management is applied to all ARSR-4 hardware, software, equipment, facilities, and documentation throughout the life cycle of the system. Specific requirements are imposed on the ARSR-4 contractor for the performance of configuration management functions as described in Order 1800.8E, chapter 6.

e. Project directives (PD) are written agreements between the program office and functional organizations performing work for the FARR Program. They are negotiated as requirements arise. PD's currently in force or in process include:

(1) PD No. T0906A between ANR-140 and ACN-230. The FAA Technical Center (ACT-100) will provide technical assistance contract monitoring and field evaluation of the first ARSR-4 system.

(2) PD No. APM-370-FY87-1 between ANR-140 and ANR-130. The Mode S Program Office (ANR-130) is procuring open array en route beacon antennas to satisfy the monopulse requirement of the Mode S system. These identical beacon antennas are required for the FARR Program at sites not receiving the Mode S system. This PD establishes the guidelines for the Mode S Program to obtain beacon antennas for the FARR Program.

(3) PD No. TBD between ANR-140 and ANA-160, in regard to the ARSR-4 interfaces with the RMS, will be developed in accordance with Order 6090.1, Development and Implementation of RMS, within the NAS.

53. PROGRAM RESPONSIBILITY. The majority of the management functions of the program will be accomplished through the use of matrix management techniques and established functional organizations as listed in paragraph 56 of the Project Master Plan for the FARR Program.

54. PROGRAM MANAGERIAL COMMUNICATIONS. Information dissemination for the FARR Program will be handled through various means.

a. Letters, memos, minutes, etc.

b. Scheduled meetings/region visits/site visits.

c. Working groups. Representation will include all FAA and USAF organizations involved with the program.

55. IMPLEMENTATION STAFFING. Program office staffing requirements are shown in the Program Manager's Charter in Appendix 1 of the Project Master Plan for the FARR Program dated March 1987.

56. REQUIRED REPORTS. The program manager will use reports generated by responsible organizations as one means to maintain program control as well as to inform FAA and USAF organizational elements of program status and progress. The following are representative of those required. Additional reports will be generated as required.

a. Program Management Status Report (PMSR). These reports, which will be submitted by the contractor in accordance with the contract schedule, discuss the contractor's work progress, provide an updated milestone schedule reflecting current status, and address all known potential or actual problem areas.

b. Quality Reliability Officer (QRO) Reports. These biweekly reports will be prepared by the QRO and submitted to the contracting officer and program manager. The reports will detail contractor progress, program changes, and any special problem areas as observed by the QRO.

c. Regional Status Report. This report, prepared by the FAA Regional Airway Facilities divisions, will cover technical progress and cost performance during preparation, installation, integration, and testing at each site and will be submitted on a schedule determined by the program office.

d. Quarterly Status Report. A quarterly program status report will be developed and submitted by ANR-1 to the Assistant Secretary for Budget and Programs in accordance with DOT Order 4200.9A, Acquisition Review and Approval, and DOT Order 4200.14B, Major Systems Acquisition Review and Approval. This report will assess the cost, schedule, and technical performance of the FARR Program against predictions. The program manager is responsible for status reporting on the schedule, financial, and technical performance while ALG is responsible for reviewing for consistency with the acquisition process milestones.

e. Site Preparation and Installation Report (SPIR). SPIR's that detail requirements for installation preparation at each site will be prepared by the

contractor and submitted to the Joint Program Office (JPO). Each initial SPIR will be submitted 33 months before delivery of the ARSR-4 at the site. The final version of each SPIR will be submitted 30 months before system delivery.

f. Site Modifications Drawing Packages (SMDP). An SMDP will be prepared for each site by the JPO in coordination with the FAA regional office. The SMDP will be reviewed by FAA, USAF and joint planning activities to assure that all operational requirements have been fully and adequately addressed. The SMDP will be completed before ARSR-4 site modifications begin.

57. APPLICABLE DOCUMENTS. Certain key documents provide authority and direction for the FARR Program.

a. Subagreement NAT-820 to Memorandum of Agreement NAT-711 between the Department of Transportation and the Department of the Air Force for FAA/AIR Force Radar Replacement (FARR) Program, September 1, 1988.

b. USAF Program Management Directive for FAA/AF Radar Replacement Program.

c. Program Manager's Charter for the Federal Aviation Administration/Air Force Radar Replacement (FARR) Program, September 17, 1985.

d. System Requirements Statement - Air Route Surveillance Radar-Model 4 (ARSR-4), August 29, 1986.

e. Key Decision Memorandum, FAA/Air Force Radar Replacement (FARR) Program, August 20, 1987.

f. Specification FAA-E-2763b, Federal Aviation Administration/Air Force Radar Replacement (FARR), May 6, 1988.

g. Selection Plan No. X-87, FAA/Air Force Radar Replacement (FARR) Program, August 20, 1987.

h. Life Cycle Cost Analysis for FAA/Air Force Radar Replacement (FARR) Program, April 1986. ATC-85-1045 Rev 2.

i. Benefit/Cost Analysis for FAA/Air Force Radar Replacement (FARR) Program, May 1986. ATC-85-1084 Rev 1.

j. Master Test Plan, FAA/Air Force Radar Replacement (FARR) Program, March 1, 1987.

k. Project Master Plan, FAA/Air Force Radar Replacement (FARR) Program, March 1987.

l. Life Cycle Cost Benefit Analysis for FAA/Air Force Radar Replacement (FARR) Program, February 1987, ATC-85-1084 Rev 2.

58.-59. RESERVED.

CHAPTER 6. FUNDING

60. PROGRAM FUNDING. The resources required to implement the FARR Program are requested and provided through the FAA and USAF budgeting process. The FAA and the USAF, under subagreement NAT-820 to NAT-711 Procurement of 3-D Radar for Joint-Use Facilities, will fund equally (50/50 cost share) the total costs to establish 39 joint-use ARSR-4 radar facilities and one AN/FPS-117 radar. The AN/FPS-117 is currently located at Gibbsboro, New Jersey. It will be relocated to Alaska. The USN is funding 100 percent of the cost to establish three ARSR-4 radars. The USAF will fund 100 percent the ARSR-4 for Mt. Kokee. The USAF will transfer funds each fiscal year. There will be no actual transfer of funds from the FAA to the USAF for the FAA share of the AN/FPS-117. This amount will be credited to the USAF in their transfer of ARSR-4 funds to the FAA. The financial management system will provide for integrity and separation of different categories of USAF funds. The USN portion of FARR Program costs has been transferred to the FAA.

a. FAA F&E funds will be provided for the following:

(1) Production of the ARSR-4.

(2) Regional F&E costs associated with site preparation work, installations, and decommissioning.

(3) FAA in-house support for the FARR Program (F&E).

(4) Contractor support for the FARR Program (F&E).

(5) Initial logistics support capability.

b. USAF funds are provided under the following categories:

(1) 3080 - Production of the ARSR-4.

(2) 3300 - Costs associated with facilities and storage.

(3) 3400 - Costs associated with interim contractor support.

(4) 3600 - Research and development costs.

c. The financial status of the FARR Program will be monitored by the following:

(1) Program Status Review Board (PSRB). The PSRB will meet to provide updates in obligation planning and contractual agreements associated with the FARR Program. A PSRB report will be used by management. It will report the highlights of any financial issues as well as provide an overview of technical and schedule status.

(2) Major Systems Acquisition Program Review. Briefings are provided to upper level DOT and FAA management on a quarterly basis.

(3) Program Reviews. Monthly meetings with the contractor.

61. FINANCIAL MANAGEMENT. The financial management activity for the FARR Program includes budget formulation, fiscal program management, reporting, and auditing. These activities provide a base for the analysis of resource requirements, preparation of budget estimates and submissions, managing the obligation plan, and assessing the cost impact of changes to the program.

62. FINANCIAL CONTROL, MONITORING, AND ANALYSIS. The ARSR-4 contract is a firm fixed price contract. However, the price for some equipment and options must be negotiated later. No detailed reports are required of the contractor.

63.-69. RESERVED.

CHAPTER 7. DEPLOYMENT

70. GENERAL DEPLOYMENT ASPECTS.

a. Site Types. Each of the ARSR-4 installation locations (sites) will be designated as a specific site type in accordance with the following criteria.

(1) Type I. These sites require the construction of a new tower and a new equipment building. The new building will include space for installation of ARSR-4 equipment, Government Furnished Equipment (GFE), External Interface Equipment (EIE), and auxiliary equipments. The Government will provide the building and the tower footings. The contractor will provide and erect the tower at these sites.

(2) Type II. These sites require the construction of a new tower, but will use an existing building for installation of ARSR-4 equipment, GFE, EIE, and auxiliary equipments. The Government will prepare the building for the required installations and install the tower footings. The contractor will provide and erect the tower at these sites.

(3) Type III. Two sites, Gibbsboro, New Jersey and Mount Santa Rosa, Guam, will use a modified, existing, combined tower/building for installation of the ARSR-4 system, GFE, EIE, and auxiliary equipments. The contractor will determine all retrofitting, modification, and strengthening required of these towers for installation and support of the ARSR-4. The Government will prepare the existing tower/buildings for the installation.

b. Relocations.

(1) ARSR-4 Program. The existing site at Crescent City, California, will be replaced by a new site at Rainbow Ridge, California, under the aegis of the FARR Program.

(2) National Airspace System (NAS) Change Proposal (NCP) 12209, JRPG Recommendations for ARSR-4 Site Relocations, was approved by the Configuration Control Board (CCB) in March 1990. Costs associated with the approval will be funded by other than FARR Program funds. ARSR-4 delivery sites specified in FAA-E-2763b will be relocated as follows:

from Ellington, Texas, to Morales, Texas
from El Paso, Texas, to Eagle Peak, Texas
from Phoenix, Arizona, to Ajo, Arizona
from Sonora, Texas, to Rocksprings, Texas
from Odessa, Texas, to King Mountain, Texas
from Silver City, New Mexico, to Deming, New Mexico
from Lakeside, Montana, to Point Six, Montana
from Malmstrom, Montana, to Porphry Peak, Montana.

The ARSR-4 delivery sequence and schedule shown in figure 7-1 was prepared in accordance with the terms of the contract. In as much as the contract was in month 21 when the NCP was approved, the schedule does not provide for the

desired 48 months lead-time for procurement and preparation of the new site locations. Necessary schedule and site implementation planning action changes will be addressed on an individual site basis.

(3) Bucks Harbor, Maine, was considered for relocation to a new site. That relocation has been determined to be unnecessary. However, full operational capability of the Bucks Harbor facility must be maintained during the ARSR-4 installation. A comprehensive cost analysis has indicated that the most economical way to accomplish the installation while maintaining service is to install a new ARSR-4 building as well as a new tower within the confines of the existing site property.

c. Unique Requirements.

(1) Mill Valley, California, will be the first site where the ARSR-4 will be installed. Phase II of the contractor's testing, Onsite Qualification Test and Evaluation (Onsite QT&E), will be conducted over a period of 7 months at Mill Valley. In order to minimize any disruption in the ongoing operational performance of the site, Mill Valley will receive a new building as well as a new tower.

(2) The Mike Monroney Aeronautical Center will require a building that is larger than the standard new ARSR-4 building. The Aeronautical Center building will house the ARSR-4 Program Support Facility (PSF) as well as the ARSR-4.

(3) Mount Santa Rosa, Guam, has a concrete tower that has been constructed to withstand the frequent typhoons in the Guam area. That tower will be used for the ARSR-4.

(4) Gibbsboro, New Jersey, is presently a USAF managed site and is equipped with an AN/FPS-117 radar which will be removed and reinstalled in Alaska. The FAA will assume management of Gibbsboro concurrently with the ARSR-4 installation. It has been determined that the temporary shut down of the site, in order to change out the radars, will be acceptable. The existing tower will be utilized at Gibbsboro.

d. ARSR-3 Sites. Ten sites, as listed in subparagraphs (1)-(10), are presently ARSR-3 sites. The ARSR-3 radar and tower at all of these sites will be removed after the ARSR-4 installation. Wherever the condition of the building permits, the ARSR-3 building, modified as necessary, will be used for the ARSR-4. Exceptions include Mt. Kaala, Hawaii, and possibly Mt. Laguna, California. The Mt. Kaala ARSR-4 will be installed in an extension that will be built onto the operations building. Siting of the new tower at Mt. Laguna may require that a new building be erected. Relocation of Lakeside, Montana, and Sonora, Texas, will require new buildings at the relocation sites.

(1) Riverhead, New York
(2) Empire, Michigan
(3) Lakeside/Point 6, Montana
(4) Mt. Laguna, California
(5) Fort Lonesome, Florida
(6) Nashwauk, Minnesota
(7) Finley, North Dakota
(8) Mt. Kaala, Hawaii
(9) Cross City, Florida
(10) Sonora/Rocksprings, Texas

FIGURE 7-1. ARSR-4 DELIVERY SEQUENCE AND SCHEDULE

LOCATION	RELOCATION	FAA REGION	AIR DEFENSE SECTOR	DELIVERY DATE
MILL VALLEY		AWP	SW	11/22/91
FAA AERO CTR		AAC		1/22/92
MAKAH		ANM	NW	6/22/92
OCEANA		AEA	SE	7/22/92
LAKE CHARLES		ASW	SE	8/21/92
SAN CLEMENTE				9/22/92
PASO ROBLES		AWP	SW	10/22/92
CRESCENT CITY		AWP	SW	10/22/92
JEDBURG		ASO	SE	11/23/92
GUAM		AWP	*	12/22/92
TYNDALL		ASO	SE	12/22/92
SALEM		ANM	NW	1/22/93
GIBBSBORO		AEA	NE	2/22/93
ELLINGTON	MORALES	ASW	SW	2/22/93
WATFORD		AGL	NW	3/22/93
CROSS CITY		ASO	SE	4/22/93
SLIDELL		ASW	SE	4/22/93
KEY WEST		ASO	SE	4/22/93
FORT FISHER		ASO	SE	5/21/93
GUANTANAMO				5/22/93
BUCKS HARBOR		ANE	NE	6/22/93
EL PASO	EAGLE PEAK	ASW	SW	6/22/93
PHOENIX	AJO	AWP	SW	7/22/93
RICHMOND		ASO	SE	8/23/93
NASHWAUK		AGL	NW	8/23/93
LAKESIDE	POINT SIX	ANM	NW	9/22/93
MT. KAALA		AWP	*	10/22/93
SONORA	ROCKSPRINGS	ASW	SW	10/22/93
WHITEHOUSE		ASO	SE	11/22/93
RIVERHEAD		AEA	NE	12/22/93
SILVER CITY	DEMING	ASW	SW	12/22/93
EMPIRE		AGL	NE	1/21/94
FINLEY		AGL	NE	2/22/94
UTICA		AEA	NE	2/22/94
MICA PEAK		ANM	NW	3/22/94
MT. LAGUNA		AWP	SW	4/22/94
MALMSTROM	PORPHRY PEAK	ANM	NW	4/22/94
PATRICK		ASO	SE	5/23/94
ODESSA	KING MOUNTAIN	ASW	SW	6/22/94
FORT LONESOME		ASO	SE	6/22/94
NORTH TRURO		ANE	NE	7/22/94
OILTON		ASW	SW	8/22/94
ALASKA **		AAL		8/21/93
MT. KOKEE			*	TBD

*=6010 AERODG **=AN/FPS-117
***=Proposed Relocation SYS-003

e. ARSR-1/2 and ARSR-60 sites have operations buildings that can accommodate the installation of the ARSR-4 while maintaining full service on the commissioned radars and beacons. New towers will be provided at each of these sites. Except in those cases where the cable-run distance from the ARSR-4 processing equipment to the new tower antenna deck exceeds 300 feet, the installation will be completed either in the main building or in an existing USAF extension to the main building. Only brief, previously approved shutdowns of the commissioned radar and/or beacon will be required during the installation and check-out of the ARSR-4.

f. Arctic/Military Construction Program (MCP) towers provide both the tower and the equipment room for the commissioned radar at the sites listed in subparagraphs (1)-(10). New towers and new buildings will be provided at these sites unless there are existing buildings available and utilization of an existing building is more economical.

(1) Fort Fisher, North Carolina
(2) Makah, Washington
(3) Mount Kokee, Hawaii
(4) Oceana, Virginia
(5) Patrick, Florida
(6) Lake Charles, Louisiana
(7) Mica Peak, Washington
(8) North Truro, Massachusetts
(9) Oilton, Texas
(10) Tyndall, Florida

NOTE: Equipment is housed in an adjacent building at Makah, Washington.

71. SITE PREPARATION.

a. Planning. Site preparation is a coordinated effort that involves the JPO, the FAA region, USAF/Engineering and Installation Division (EID) and the contractor. The FAA region's participation includes the sector and the site personnel. USAF/EID, supported by a Host Base assigned to each ARSR-4 site as appropriate, is the implementing office for USAF planning and installation activities. The JPO provides the overall coordination and FARR funding as appropriate. The FAA region provides the final site design and exercises direct control over the implementation of all site preparation activities. The contractor provides details in regard to the site preparation necessary for the ARSR-4 tower and radar installation. Site preparation planning includes the following activities.

(1) Government site surveys will be conducted at all sites in accordance with a schedule published by the JPO. The schedule will plan site visits approximately 36 months before ARSR-4 delivery and will be adjusted as necessary to accommodate the coordination necessary between all participants. Participants include the JPO, Air Traffic Plans and Requirements Service, the FAA region including sector and site personnel, the Co-Chairmen of the JRPG, HQ Tactical Air Command (TAC), HQ 1st Air Force (1AF), USAF air divisions and sectors as appropriate, USAF/EID, and other FAA and USAF activities as appropriate. The number of attendees will be kept to the minimum necessary to determine the optimum configuration of the site and to develop the planning and schedule necessary to accomplish that configuration.

(2) Program Support Agreements (PSA) will be prepared by USAF/EID for each site in order to specifically define and assure concurrence between the FAA and the USAF concerning responsibilities in regard to site implementation requirements. The PSA will be prepared on the basis of the agreements reached during the Government site survey. The PSA will identify and schedule all implementation requirements including planning, engineering, construction, removal, and site renovation activities to be accomplished coincidental to the ARSR-4 installation. The PSA will be reviewed by the participants in the Government site surveys. Comments will be forwarded to the JPO via the FAA region, for FAA comments, and via HQ TAC for USAF comments. The Co-Chairmen of the JRPG are in the review chain and will provide assistance to the JPO review and approval of the PSA in order to assure that all operational requirements have been adequately addressed in the ARSR-4 site implementation planning.

(3) Westinghouse site visits will be conducted after the Government has determined the intended site configuration. These visits will be coordinated by the JPO with the FAA region. Normally a member of the JPO and USAF/EID will accompany the contractor site visits. Representation from the FAA region is highly desirable.

(4) SPIR will be prepared by Westinghouse. The Government has provided the contractor with available documents containing site specific information required for appropriate planning and subsequent installation of the ARSR-4. This information will be verified by the contractor and documented in a SPIR for each site. Each SPIR will be submitted to the Government in accordance with Contract Data Requirements List (CDRL) Item F-175, Site Preparation and Installation Report. The JPO will provide copies of the preliminary SPIR's to the appropriate FAA region for comment. Other distribution is in accordance with Block 14 of the CDRL. The SPIR's will be incorporated into the Government prepared site modification drawing packages (SMDP). The SPIR's will contain, but will not be limited to, the following subjects.

(a) Coordination. The contractor will identify coordination requirements regarding movement of contractor personnel and equipment on the site.

(b) Building Facility Requirements. The contractor will identify construction and spatial requirements for the ARSR-4 building facility. This includes ductwork and/or conduits which must be underground or integral to the Government provided building, requirements for electrical power, telecommunication circuits, grounding provisions, and lightning protection provisions.

(c) Equipment Storage Areas. The contractor will identify spatial requirements for onsite storage and staging areas for Contractor Furnished Equipment (CFE).

(d) Other Issues. The contractor will identify any other issues or problem areas as may be necessary.

(5) SMDP's will be provided to the contractor as guidance for the installation of the ARSR-4. The SMDP will be prepared by the JPO assisted by the FAA region and EID. It will include a subset of the drawings prepared in response to the PSA. The JPO will coordinate with the contractor and the FAA regions to assure that all of the contractors requirements for installation have been addressed in the SMDP.

b. Implementation. The FAA region has the overall responsibility for site preparation. Standard tower footing designs and standard ARSR-4 building designs will be developed by the Airport Traffic Control Tower/Facilities Program (ANS-240). Site adaptation of these designs will be the responsibility of the FAA region. At those sites where existing buildings will be used for the ARSR-4, the FAA region will be responsible for developing the plans necessary to modify the building to house the ARSR-4. The FAA region will contract for and monitor all tower footing installations, new building construction, and building modification. The USAF/EID or the designated Host Base will be responsible for the removal of USAF structures in accordance with schedules developed in coordination with the FAA region. USAF/EID will be responsible for the development of plans for USAF antenna pole installations. Installation of the poles will be contracted for by the FAA region or by the USAF Host Base in accordance with the terms of the PSA. Removal or relocation of FAA equipment will be the responsibility of the FAA region. Relocation or removal of USAF equipment will be the responsibility of EID.

72. DELIVERY. Upon completion of the site preparation by the Government, the contractor and the Government will conduct a joint site walk-through. This action will be accomplished to assure mutual concurrence that a site has been adequately prepared to permit entry to the site by the contractor and to begin delivery of CFE. The site walk-through will be completed at least 60 days before the scheduled ARSR-4 delivery date. ARSR-4 installation will not proceed until the walk through has been completed and deficiencies identified and/or corrected as may be required.

a. Contractor Responsibilities. Contractor responsibilities for the delivery, installation, and checkout of CFE and GFE are, unless otherwise stated, applicable to all sites, regardless of type. The contractor will provide all equipment, materials, and personnel necessary to fulfill its responsibilities. Work will proceed on a regularly scheduled basis through completion. Any equipment, item, part, or service necessary for the proper installation of the ARSR-4 system, not specifically designated in the contract as GFE, will be furnished by the contractor even though that equipment, item, part, or service may not be specifically provided for or described in the SOW. All installation hardware will be new material. The contractor will deliver, off-load, and set into place, or store as necessary, all CFE and items specified by the contract. These items include, but are not limited to, the ARSR-4; unassembled radar tower and parts; conduit, ductwork, and wiring required for all installation work; and unassembled radome and parts.

b. Delivery Sequence. The ARSR-4 delivery sequence and schedule is as shown on figure 7-1.

73. INSTALLATION.

a. Contractor Responsibilities. The total installation of each ARSR-4 system will be the responsibility of the contractor.

(1) The contractor will provide all equipment and materials necessary for erecting the tower (as required), radome, and installing the ARSR-4 equipments. The contractor will make all interface connections between the ARSR-4 and the Radar Cable Junction Box (RCJB).

(2) The contractor will provide and install a radome on each tower. NOTE: If the radome mounting rings are not provided as part of the CFE radomes, then a separate ring will be provided and installed by the contractor on each modified existing tower (Type III sites).

(3) The contractor will install the GFE beacon antenna(s) as furnished by the Government.

(4) Conduit, ductwork, and wiring required for the installation of the ARSR-4 and the interconnection of the ARSR-4 to the RCJB will be provided and installed by the contractor in accordance with the SMDP.

(5) The contractor will provide all equipments, materials, and personnel required to erect the towers on Types I and II sites. This will include, but not to be limited to, grounding plates, grounding wires, welding equipment, conduit, primary power wiring between external interface equipment (EIE) power panel(s) and ARSR-4 equipment, ductwork, etc.

(6) The contractor will install all CFE at each site in accordance with appropriate documentation and specifications and will supply the necessary spare parts for CFE during the installation and check out.

b. Government Responsibilities. The FAA region will be responsible for all connections from the RCJB to FAA equipment. USAF/EID will be responsible for all connections from the RCJB to USAF equipment. The technical onsite representative (TOR) of the contracting officer is the point of contact for all onsite activities. The TOR is not authorized to permit any changes to the terms and conditions of the contract. The FAA region/TOR will coordinate the contractor/FAA/USAF work to assure that there is no conflict between the installation crews. The FAA region/TOR will assure that all work is completed in a timely manner in support of acceptance of the ARSR-4 from the contractor and in support of the joint acceptance inspection (JAI) and shakedown testing.

c. Installation and Checkout Constraints. Air traffic control and air defense activities and services will have priority over all installation activities. There will be no compromise of the safe and timely control of aircraft during the entire installation period. The contractor will provide services in a manner that minimizes disruptions to air traffic control and air defense activities and conforms to the procedures considered essential by the Government for assuring safety in air traffic control and continuity of air defense. Installation of the antennas and radomes and movement and erection

of construction equipment and supporting structures will be scheduled and coordinated through the TOR. The TOR will coordinate such activities with local and regional air traffic, airway facilities, and air defense personnel for final scheduling. The TOR will provide a point of contact and phone number to the management of each facility receiving radar data from the site so that any problems created by the installation can be resolved immediately. Requirements for coordination with multiple air traffic and defense facilities and factors such as one radar providing data to more than one facility will be considered by the TOR. Other operational height-finder radars, surveillance radars, and beacon radars will operate with minimum or no disturbance or contamination of their data outputs. Any required shutdowns of operational facilities to accommodate ARSR-4 installation and testing will normally be permitted only between the hours of 10:00 p.m., and 6:00 a.m., (local time), based on Government approval (air traffic, air defense, and weather conditions permitting). Any radio frequency (RF) radiation from the ARSR-4 must take place on a non-interference basis with adjacent operational radar systems.

d. Cleanup. The contractor will deliver to the Government a clean installation both inside and outside. Upon completion of installation of CFE, the contractor will remove all self-generated trash and foreign material from the interior of the building. Damage and finish degradation to any building, electronic subsystem interior or exterior surface, or other installed equipments, resulting from transportation and/or installation activities, will be repaired by the contractor. The contractor will remove all self-generated trash, litter, packing, and excess material from Government property. The access road, parking area, facility plot, building exteriors, etc., will be free of litter.

e. Restoration. The FAA region will complete any other site restoration that is required. The detailed requirements for each site will be addressed during the Government site survey. Responsibility for funding and any other support provided by agencies other than the region will be addressed in the PSA. Plans for necessary site restoration will be included in the site design package to be developed by the region.

74.-79. RESERVED.

CHAPTER 8. VERIFICATION

80. GENERAL. Verification for the ARSR-4 includes: four phases of testing conducted by the contractor and witnessed by the Government; integration testing conducted by the Government; shakedown testing conducted by the Government, and completion of the JAI conducted by the JPO and the FAA region. The four phases of contractor testing include:

a. Phase I, In-Plant Qualification Test and Evaluation (In-Plant QT&E).

b. Phase II, Onsite Qualification Test and Evaluation (Onsite QT&E).

c. Phase III, In-Plant Production Acceptance Test and Evaluation (In-Plant PAT&E).

d. Phase IV, Onsite Production Acceptance Test and Evaluation (Onsite PAT&E).

81. FACTORY VERIFICATION. To best utilize the time available for testing and to reduce schedule risk, the first three ARSR-4 systems produced are designated collectively as the First Article Acceptance Test Unit. The contractor will maintain strict configuration management on these systems in order to assure that they are identical in all respects for testing purposes. These systems will be fully interchangeable in terms of test acceptability so that all three systems can be used for selected parts of Phase I, In-Plant QT&E. One designated First Article System will be initially installed at the contractor's plant test facility where it will undergo reliability testing. It may also be used for training. At the completion of training and any subsequent testing, this system will be delivered to an operational site in accordance with the contract delivery schedule. A second designated First Article system, also installed at the contractor's test facility, will be connected by land line to the FAA Technical Center and the RSSF at Tyndall Air Force Base to demonstrate ARSR-4 interfaces and to provide inputs into Government conducted testing at these sites. This system will also be used for factory-conducted flight testing. At the completion of Phase I QT&E, this second designated First Article system will be delivered and installed at the Mill Valley, California, site where it will then undergo Phase II QT&E. The third designated First Article production system will be delivered and installed with the PSF at the Mike Monroney Aeronautical Center in accordance with the contract delivery schedule.

a. In-Plant QT&E. Phase I will consist of the inspections, analyses, demonstrations, and tests performed at the contractor's facilities on a system, subsystem, and unit (e.g., RMS, Weather Processor, etc.). The contractor will perform all Phase I tests specified in section 4 of FAA-E-2763b. This phase of testing and evaluation will provide answers to the majority of the critical questions and areas of risk associated with development of the ARSR-4. The Government may or may not witness these tests; however, the Government will have access to the results of the tests to aid in determining the validity of follow-on test procedures. The contractor will provide telephone land lines as necessary. Verification of equipment performance and proper interfacing with all EIE and with the ARTCC, FAA

Technical Center, SOCC, and the RSSF will be accomplished during this phase. Flight testing and analysis will be conducted by the Government in conjunction with the contractor. Except for maintainability and reliability testing, Phase I QT&E will be completed by November 1991. No systems will be shipped or Phase II QT&E started until this specified Phase I QT&E is completed.

b. In-Plant PAT&E. Phase III is the in-plant quality assurance test for production of the ARSR-4 and applies to all systems provided by the contractor. This series of verification tests provides confidence that the production units, equipment, and systems meet the contracted specifications. Verification of units and functional areas of complete systems will be conducted prior to shipment to the site. The contractor will perform all inspections, analyses, demonstrations, and tests necessary to establish compliance with the requirements listed in table 4-1 of FAA-E-2763b.

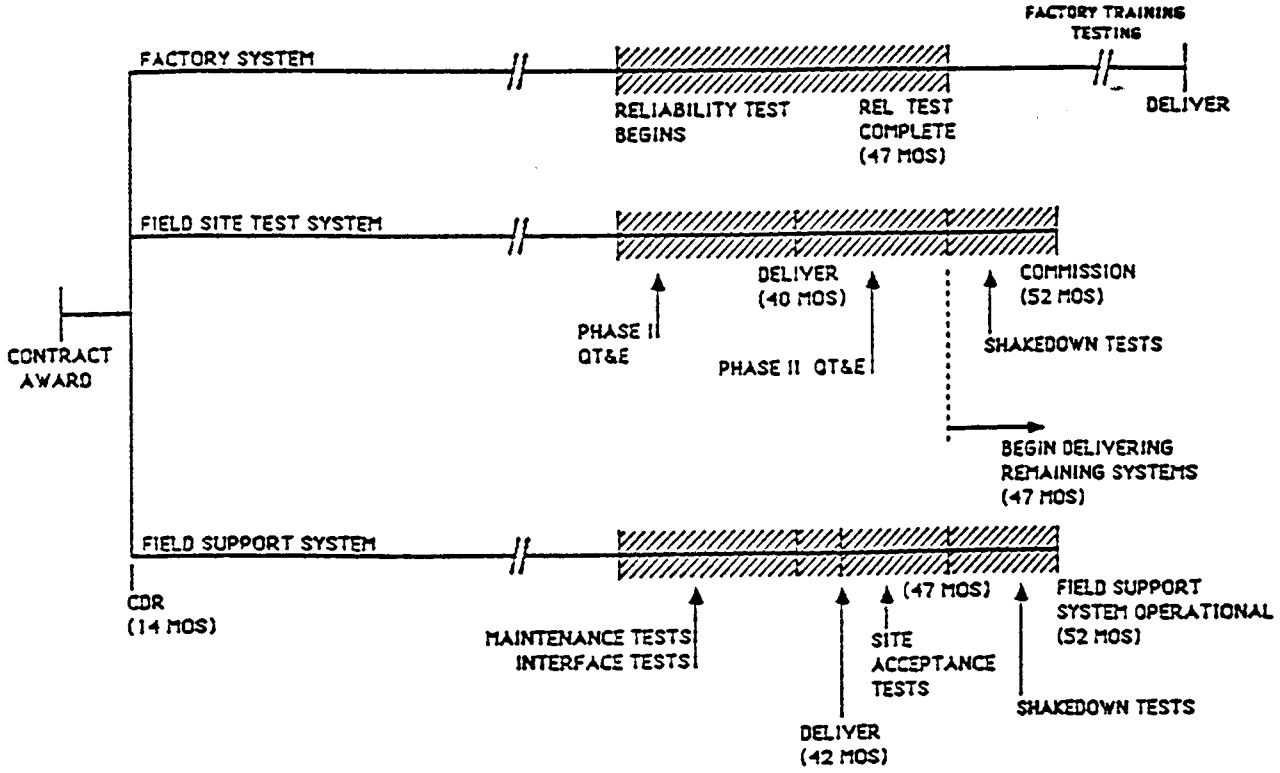
82. CHECKOUT.

a. Onsite QT&E. The purpose of onsite QT&E is to emphasize quality and visibility of the design when it is subjected to a test site and the live air traffic environment. Phase II will be conducted at the Mill Valley site. The contractor will perform all inspections, analyses, demonstrations, and tests necessary to establish compliance with table 4-1 of FAA-E-2763b. External operational system interfaces will be with the FAA and USAF control centers, the FAA Technical Center, the RSSF, and with all other site equipment. Verification will emphasize operational parameters not feasible to test or evaluate in the factory environment. Verification will include installation and system check-out verification, verification of the integrated functional areas within the complete system, and verification of the complete system in the field environment. These tests will be conducted by the contractor and witnessed by the Government. Testing will be conducted using live inputs and recorded or simulated inputs as necessary for verification of specified ARSR-4 performance parameters in an operational environment. Flight testing and analysis will be conducted by the Government in conjunction with the contractor. When clutter processing, false report rates, and target detection capabilities are verified by this phase of testing, (e.g., via flight testing over or in, or both, clutter; measuring false reports; measuring clutter intensities and spectral qualities; etc.), the clutter conditions actually experienced at the site will be used as the baseline to which the contractor proves to the Government that the system is meeting the specified requirements for each individual site. However, the clutter conditions specified in appendix A and table 3-1 of FAA-E-2763b will be used as the minimum clutter levels to which the contractor proves to the Government that the system meets the specified requirements, if the actual site clutter levels experienced are less intense. All test equipment to demonstrate ARSR-4 performance, remote performance monitoring, and all other maintenance tasks will be provided by the contractor. The standard test equipment will remain at the site for the duration of the tests.

b. Onsite PAT&E. At subsequent sites, the contractor will fully interface the ARSR-4 with the FAA and USAF control centers and all EIE as specified. The contractor will perform all inspections, analyses, demonstrations, and tests necessary to establish compliance with the requirements listed in table 4-1 of FAA-E-2763b for Phase IV. Phase IV is the

onsite quality assurance tests for the ARSR-4 and applies to all production systems. The purpose of this verification phase will be to ensure system compliance with all applicable requirements prior to final ARSR-4 acceptance by the Government. Some of the specific tests for this phase of testing will be derived from previous (Phases I, II, III,) phases upon approval by the Government. When clutter processing, false report rates, and target detection capabilities are verified by Phase II or Phase IV testing (e.g., via flight testing over or in, or both, clutter; measuring false reports; measuring clutter intensities and spectral qualities; etc.), the clutter conditions actually experienced at the site will be used as the baseline to which the contractor proves to the Government that the system is performing as required for each individual site. However, the clutter conditions specified in appendix A and table 3-1 of FAA-E-2763b are the minimum clutter levels to which the contractor proves to the Government that the system meets the specified requirements, if the actual site clutter levels experienced are less intense. Figure 8-1 details the testing of the first three ARSR-4 systems.

FIGURE 8-1. FIRST ARTICLE ACCEPTANCE TESTS



83. CONTRACTOR INTEGRATION TESTING.

a. The contractor will demonstrate that the ARSR-4 can interface and operate compatibly with the following:

(1) SOCC.
(2) RSSF.
(3) ARTCC.
(4) FAA Technical Center.
(5) ATCBI-5.
(6) Mode S.
(7) RRWDS.
(8) RMMS.
(9) Modems.
(10) Mode 4 Computer, Interface Device, and Fill Device.

b. As many interfaces and functions will be simultaneously active for this test as facility operational requirements permit.

84. CONTRACTOR ACCEPTANCE TESTING. The ARSR-4 systems installed at Mill Valley and at the Mike Monroney Aeronautical Center will be fully ready and qualified for final Government acceptance by June 1992. Criteria for final Government acceptance of the ARSR-4 design includes satisfactory completion of Phase II QT&E for the system at Mill Valley, California, satisfactory demonstration of all FAA-E-2763b and SOW requirements for the PSF at the Mike Monroney Aeronautical Center and satisfactory completion of reliability testing of the system at the contractor's plant. Phase II QT&E will be considered completed upon final Government acceptance of the ARSR-4 systems installed at the first operational site and at the Mike Monroney Aeronautical Center. No additional systems will be shipped until Phase II QT&E is completed. Criteria for final Government acceptance of subsequent ARSR-4's will be satisfactory completion of Phase IV PAT&E at each site.

85. FAA INTEGRATION TESTING.

a. Integration testing for the ARSR-4 includes both FAA NAS Integration and USAF Joint Surveillance System (JSS) Integration. Integration testing will be conducted on the First Article Test Unit which is described under Factory Verification, paragraph 81. Integration testing will be conducted between the FAA Technical Center NAS and ARSR-4 system located first at the contractor's plant and subsequently relocated at the first ARSR-4 operational site at Mill Valley, California, and then between the Mill Valley site and the Oakland ARTCC. Concurrent testing will be conducted between the radar sites and the ROCC RSSF at Tyndall Air Force Base (AFB), Florida, and SW SOCC facility at March AFB, California. Integration testing will:

(1) Verify the ARSR-4's capability to properly interface with available/simulated equipment and/or subsystems for the different test configurations.

(2) Provide guidance to follow-on ARSR-4 sites in the area of integration testing.

(3) Verify that the interface design yields specification mandated performance.

(4) Provide early detection of interface design problems.

(5) Minimize the risks associated with proceeding to the next program milestone.

(6) Minimize field site problems by conducting, documenting, and providing guidance for ARSR-4 integration testing.

b. Verification of all system level requirements will determine the operational effectiveness and suitability of the ARSR-4 subsystems as well as identify operational deficiencies to provide information on operational procedures, organizations, training, logistics, and personnel requirements prior to field deployment.

86. SHAKEDOWN AND CHANGEOVER. Shakedown testing will test each ARSR-4 system in its operational environment in order to support determination that the system is ready for full operation as part of the NAS. ASM-600 will develop and manage the shakedown test plans and procedures. The actual performance of the shakedown test will be completed by the operations and maintenance personnel who will use the output provided by each ARSR-4 at a particular site and who will have the maintenance and certification responsibility for that particular site. Shakedown and changeover will be supported by the FAA regions, the USAF Air Defense Sectors and the USAF 84th Radar Evaluation Squadron (RADES) in accordance with the provisions of the Shakedown Test Plan. The Shakedown Test and Evaluation (ST&E) effort will assess the ARSR-4 operational suitability in the following broad areas as a minimum.

a. Validation of system interfaces.

b. Identification and correction of operational deficiencies.

c. Configuration optimization and baselining of performance at each site.

d. Determination of the operational effectiveness and suitability of the ARSR-4.

e. Verification and archiving of site adaptation parameters.

f. Ensuring the existence of and the correctness of coordinating and operational procedures.

g. Development of necessary transition/switchover plans.

87. JOINT ACCEPTANCE INSPECTION.

a. A JAI will be performed in accordance with Order 6030.45, Facility Reference Data File, to transfer facility operation and maintenance from the JPO to the appropriate FAA region, or for Mt. Kokee to the Hawaiian Air National Guard (HIANG) and 6010 AERODG. The JAI may include a number of

partial JAI's leading up to a final acceptance. Participants in the JAI will include representatives from the JPO, the USAF sector involved, the FAA region, and FAA Washington headquarters as required. Important milestones during the JAI are Initial Operating Capability (IOC), Operational Readiness Demonstration (ORD), the joint USAF/FAA ground radar evaluation (per Order OA 6430.1, Joint ADC/FAA Ground Radar Evaluation Manual) and finally commissioning. The complexity of the ARSR-4 program requires a series of partial JAI's as follows:

(1) Contractor acceptance inspection - facility accepted by the Government.

(2) Familiarization and indoctrination.

(3) Partial JAI - ARSR-4 operation and maintenance assumed by region.

(4) Partial JAI - declaration of IOC.

(5) Shakedown and changeover.

(6) Partial JAI and ORD.

(7) Commissioning flight check.

(8) Final JAI and commissioning.

b. After the final JAI, reports will be submitted per Order OA 6430.1. The USAF radar evaluation squadron will participate in preparation of the joint USAF/FAA evaluation report. The formats for these reports are documented in the respective orders. The joint acceptance inspection, in coordination with the shakedown and changeover procedures, will evaluate the installation to determine that the facility has been established in accordance with engineering plans, standard drawings, specifications, agency installation standards and criteria, and all applicable safety codes (see Order 3910.3, Radiation Health Hazards and Protection); has been properly constructed, installed, tuned and adjusted; adequately provides for maintenance needs, i.e., tools, test equipment, documentation, spare parts, maintenance procedures, standards and tolerances, and is capable of performing its required functions on a commissioned basis. The final JAI will determine that the facility is ready for commissioning.

88.-89. RESERVED.

CHAPTER 9. INTEGRATED LOGISTIC SUPPORT

90. MAINTENANCE CONCEPT.

a. Three-Level Approach. The FARR Program involves three-dimensional radars with associated auxiliary system, support, and interface equipment. The radar will be designed in accordance with the FAA 80's maintenance concept with built-in RMS capabilities including an interface with the RMMS. A three-level maintenance concept will be employed. These three levels are:

(1) Organizational Maintenance, performed at ARSR-4 sites.

(2) Intermediate Maintenance, performed at work centers.

(3) Depot Maintenance, performed at the FAA Depot.

b. Maintenance Levels. Organizational maintenance is performed on systems, subsystems, and support equipment in direct support of ARSR-4 operations. It includes system maintenance monitoring, system fault isolation, and correction of system failures through the removal and replacement of Line Replaceable Units (LRU), but does not include disposition, repair, service, calibration, and verification of the removed LRU's. Removed LRU's will be forwarded to the work center and/or FAA Depot for repair. Intermediate maintenance is performed in direct support of organizational level maintenance and involves disposition, repair, service, calibration, and verification of LRU's removed during site maintenance. It normally excludes activities requiring equipment, facilities, or skills that can be provided more economically at the FAA Depot level. FAA Depot level maintenance includes the responsibility for repair of LRU's, such as printed circuit boards, which are beyond the economic or skill capability of the work center maintenance level.

c. Maintenance Personnel. There are four major maintenance functions (monitoring, diagnostic, repair, and preventive maintenance) that must be quantified and supported by maintenance personnel per FAA delineation of personnel levels. (In accordance with Air Force delineation at Mt. Kokee.)

d. Contractor Maintenance Support. The contract has an option to provide the Government with hardware and software maintenance support of the ARSR-4. Software maintenance support will be provided through the PSF located at the Aeronautical Center. The contractor will:

(1) Use the diagnostic software, test equipment, tools, supplies, and parts supplied with the ARSR-4 procurement for the accomplishment of maintenance activities.

(2) Provide work center and/or onsite maintenance tasks/coverage in accordance with the approved FAA maintenance procedures and directives. Periodic maintenance tasks will be performed in accordance with the established schedules.

(3) Notify the Government site representative prior to the beginning of any onsite maintenance activity. No maintenance activity will begin prior to Government coordination and approval.

(4) Notify the Government site representative at the completion of maintenance activities and will provide an assessment of equipment status as a result of work performed.

e. Dedicated Repair Service (DRS). The contractor will, at the option of the Government, obtain material and services for repair of selected repairable items. Repairable items are those of a durable nature which, when unserviceable, normally can be restored to a serviceable condition by a repair activity. The contractor will furnish all labor, tools, and test equipment, software, facilities, material, and any other technical or administrative support necessary to repair repairable items.

f. Spare Parts. Upon notification by the Government of intent to exercise the option for DRS, the contractor will purchase and have available by the beginning of the performance period lay-in-inventory consisting of an initial supply of unit/piece parts required for the repair of all items as specified.

91. TRAINING. The Maintenance and Operations Division (ASM-200), in conjunction with the Airway Facilities Training Program Division (AHT-400), will develop a training schedule based on the ARSR-4 delivery and commissioning schedule. Initial training will be provided by the contractor. Other training will be provided by the FAA Academy.

92. SUPPORT TOOLS AND TEST EQUIPMENT. All support/test equipment required to satisfy ARSR-4 requirements will be identified and documented by Logistic Support Analysis (LSA) in accordance with MIL-STD-1388-1A, LSA, and MIL-STD-1388-2A, DOD Requirements for a Defense Logistic Support Analysis Record. The LSA will provide a comprehensive identification of support/test equipment (STE) requirements at all levels of repair. STE shall be onsite prior to JAI and remain there.

93. SUPPLY SUPPORT. Supply support of equipment spare/repair parts will be accomplished consistent with the maintenance concept for the ARSR-4 equipment.

a. Initial Provisioning. Initial provisioning requirements will be developed jointly by ALG, ANR, and the Mike Monroney Aeronautical Center and will be based on the maintenance concept.

b. Spares and Repair Parts. Provisioning of spare/repair parts will be in accordance with MIL-STD-1561b, Provisioning Procedures, Uniform Department of Defense.

c. Interim Spares. The contractor will provide the interim (initial) spares for the first 18 systems. The contractor will provide separate options to the Government to provide repair capabilities of these and other spares as well as follow-on site maintenance. These respective optional services may be continued until the FAA Depot is in full operation for ARSR-4 maintenance and FAA personnel are adequately trained for site maintenance.

94. VENDOR DATA AND TECHNICAL MANUALS. The ARSR-4 contractor will establish an in-house documentation management program that integrates the documentation management efforts and provides for coordination of contractor-recommended changes, additions, or deletions of documentation items with the program manager. The following are examples of the different kinds of documentation that will be provided by the ARSR-4 contractor:

a. Computer Programs. Software/firmware programs to be delivered for the ARSR-4 system will be divided into three categories; operational, monitor/status, and system test and support. Documentation for software are users manuals, programmers' manual, diagnostic manual, and firmware support manual.

b. Hardware Documentation. Manuals (6) will be provided to all ARSR-4 sites for operations, description, maintenance and repair, radome, and commercial equipment.

c. Packaging, Handling, Storage, and Transportation. This effort will provide feedback to the design to ensure that support and test equipment, spares, and repair parts are designed (wherever possible) to be compatible with available modes of transportation and existing handling equipment. This LSA data will be developed and documented in accordance with MIL-STD-1388-1A/2A.

95. EQUIPMENT REMOVAL. The timing and responsibility for equipment removal occasioned by the ARSR-4 implementation will depend upon the ownership of the equipment, future requirements for the equipment and the type of site from which the equipment is to be removed. After acceptance of the ARSR-4 from the contractor and in some cases after commissioning, USAF/EID and the FAA regions will be relocating/installing electronic equipment, i.e., radios, radio communication link (RCL), etc., as well as removing equipment.

a. USAF Equipment. The USAF/EID will remove all USAF equipment. Current plans are to shut down and remove HFR's at all except three sites before the scheduled ARSR-4 delivery date. Radomes and HFR towers, including tower footings and foundations to at least one foot below ground level, will normally be removed in accordance with an USAF generated schedule and in adequate time to preclude any interference with the ARSR-4 implementation schedule. However, if removal of the HFR equipment and towers is required before the date scheduled by the USAF, the USAF will, wherever operationally acceptable, remove the equipment, towers, etc., as requested by the JPO. Removal prior to the USAF scheduled dates may be both an operational and an administrative decision. Therefore, notification by the JPO in advance of the required removal date is essential. Normally 12 to 14 months notification is required. On those sites where no operational decision is required and where there is not an extensive bill of materials required, the USAF can respond to a notification of about 7 months. USAF equipment that becomes unnecessary after the ARSR-4 is operational will be removed by the USAF in accordance with a schedule coordinated with the FAA region responsible for the site.

b. FAA Equipment. Removal of equipment required in order to permit the installation and commissioning of the ARSR-4 will be indicated in the SMDP. The FAA region will provide a separate schedule for the removal of equipment that becomes unnecessary after the ARSR-4 becomes operational.

c. ARSR-3 Radars, Radomes, and Towers. Equipment removal at ARSR-3 sites falls into a unique category. The removal and repackaging of the ARSR-3 radar, antenna, and tower will be scheduled as part of the ARSR-3 Leapfrog Program.

96. FACILITIES. The ARSR-4 is a replacement radar designed for unattended operation. As an unattended radar, the ARSR-4 will impact security, living accommodations, and manning requirements at all locations. The removal of existing height-finder and search radars may result in a reduced size for the site. Specific site impact will be determined on a site-by-site basis.

97. ENGINEERING FIELD SUPPORT. The National Engineering Field Support Division (ASM-600) is assigned engineering field support responsibilities for the ARSR-4. The Mike Monroney Aeronautical Center will maintain the deployed ARSR-4 system in the approved baseline configuration. The system will be deployed and managed for multipurpose program use in a manner to assure its availability for engineering resolution, testing, support of operational hardware and software problems, training, and logistics support.

98. NATIONAL AIRSPACE INTEGRATED LOGISTICS SUPPORT MANAGEMENT TEAM (NAILSMT). The FARR Program has a NAILSMT assigned to assist the program manager in planning, monitoring, and controlling the ARSR-4 contractor's integrated logistics support (ILS) activities. The team is composed of FAA headquarters, Mike Monroney Aeronautical Center, FAA Technical Center, and SEI contractor individuals who are highly qualified in the logistics disciplines. The USAF is represented. The composition of the NAILSMT is shown in the NAILS Master Plan and the FARR Program NAILSMT Charter.

99. RESERVED.

CHAPTER 10. SECURITY

100. SCOPE. This chapter discusses the physical security of facilities and equipment at ARSR-4 sites, and also the security of data at ARSR-4 sites.

101. BACKGROUND. ARSR-4 radars will be operated from unattended sites as part of the JSS. Data from each site will be provided both to an FAA ARTCC and to a USAF SOCC. Some data transmitted to the SOCC will be encrypted. Encryption devices will be housed in NSA-approved security containers and will be remotely rekeyed from the SOCC. Communications security (COMSEC) equipment will be stored in the same area as the ARSR-4 equipment. Access to the area of the building housing this equipment will be limited to FAA and USAF cleared personnel. A telephone company (TELCO) room will be separated from the ARSR-4 and COMSEC equipment. An exterior door will permit access to the TELCO room by telephone company personnel. When the ARSR-4 is installed at an existing site, the existing security procedures for that site will govern during the construction, installation, and test phases of the program. When the ARSR-4 is installed at a relocation site, the site will be unmanned during the construction and installation phases and will require special security provisions. Many of these provisions will be required during the testing phase when the site may be manned part-time.

102. REQUIREMENTS DOCUMENTATION. Order 1600.26, Department of Transportation Physical Security Manual, November 29, 1987 (Implemented as Appendix 1 to Order 1600.6B, Protection of Agency Property, August 25, 1978), is the controlling directive. The FARR JPO-developed implementation guidelines are contained in FARR JPO Memorandum, Physical Security Design Criteria for FAA/Air Force Radar Replacement (FARR) Program, ARSR-4, July 19, 1989. National Security Agency (NSA) NACSI No. 4005, Safeguarding and Control of Communications Security Material, October 12, 1979 (Implemented as AFR 56-13, July 28, 1986), For Official Use Only (FOUO), provides additional direction for protection of COMSEC material.

103. PHYSICAL SECURITY REQUIREMENTS. Physical security requirements are addressed in subparagraphs a.-e. and are covered in detail in the documents cited in paragraph 102.

a. Fence. The fence perimeter shall be 9 gauge zinc or aluminum coated steel wire chain link, 8 feet high consisting of a fabric height of 7 feet, plus a top guard.

b. Fence Clear Zone. A 20-foot clear zone will be maintained on both the inside and outside of the fenceline. Vegetation in the clear zone should not exceed 8 inches in height. If a 20-foot clear zone cannot be maintained because of surrounding structures, topography, etc., the fence height shall be increased accordingly. When a new tower or a new building is involved in the installation, it may be necessary to change the perimeter fence configuration to provide the required clearance. When a HFR, Search Radar Tower, and/or building is removed as part of the ARSR-4 installation, it may be desirable to change the perimeter fence configuration to reduce the area to be protected.

c. Gate. The only gate provided, a vehicular gate, shall be used for both vehicular and pedestrian traffic, and shall be constructed of the same material and be the same height as the fence.

d. Buildings. Buildings may be either newly constructed or existing. Existing buildings that will be retained for the ARSR-4 Program are pre-engineered metal buildings or concrete masonry buildings erected on concrete foundations. New buildings will be either pre-engineered metal buildings or concrete masonry buildings, erected on concrete foundations. The building shall be so constructed that entry will be difficult and time consuming.

(1) Doors. There will be one main entrance that will have an inner door and an outer door. The outer door will provide protection from the elements for the combination lock which is located on the inner door. (If adequate protection for the combination lock can be provided by other means, the outer door is not required.) The outer door is secured by a keyed lock. Both the outer and inner doors should be single-leaf, metal doors. Standard precautions are required to discourage unauthorized entrance and to allow anyone in the building to monitor anyone seeking entrance. Hinge pins on both the outer and inner doors will be either non-removable or located on the interior. Doors will be secured by locks of designated manufacturer and model numbers and have reinforced strike plates. "Fish-eye" viewing devices and outside overhead entrance lighting are required to facilitate identifying visitors. Fire exit doors and doors for moving equipment should meet the same requirements as for the main entrance, although the "fish-eye" viewing device, outside lights, and exterior locks or handles are not required. Fire exit doors and doors for moving equipment will have heavy-duty emergency exit deadbolts.

(2) Windows. New construction buildings will not have windows. Where feasible in existing buildings, the windows will be removed and the space filled with the same material as the building walls. Where this is not feasible, the windows will be secured to prevent opening, opaqued to prevent observation and covered with steel bars or nine gauge chain link wire to prevent entry.

e. Protection Devices.

(1) Intrusion Detection Surveillance System (IDSS). An IDSS will be provided for the ARSR-4 building to protect the ARSR-4 equipment and the USAF equipment, including COMSEC devices. The IDSS will be part of the Security/Safety system of the Environmental Remote Monitoring Subsystem (ERMS). Intrusion detection will be monitored at the Maintenance Processor Subsystem (MPS) at the ARTCC.

(2) Magnetic Door Switches. The building perimeter doors will be protected with balanced magnetic door switches located on their interior side.

(3) Motion Detection Sensors. In the area where the COMSEC equipment is housed, a motion detection sensor will be provided. The type of sensor selected will be based on the local environmental conditions.

(4) Individual Unit Protection. The National Security Agency (NSA) approved containers, in which COMSEC material will be stored, are alarmed to detect unauthorized entry. In addition, the COMSEC devices stored in the containers are designed with indicators to detect tampering. Alarm signals from these devices will also be supplied to the ERMS. Intrusion detection will be monitored at the MPS at the ARTCC. In addition, alarm signals from the NSA approved container(s) and from the COMSEC devices are to be provided to the USAF SOCC via the USAF data lines.

(5) Installation. The IDSS will be installed by the Government to discourage tampering. All control equipment should be within the ARSR-4 building and preferably in the COMSEC area where it is within coverage of the motion detector. IDSS wiring will be contained in conduit or armored cable between the sensors and the alarm control unit. Class A line supervision will be provided to detect neutralization attempts against the system. As part of the ERMS, intrusion detection will be monitored at the MPS at the ARTCC.

104. SECURITY OF DATA. Classified data will be stored in the COMSEC devices that are located in the NSA approved containers. Transfer of classified data into or out of the security container will generally be via encrypted military data communications port. However, during the initial phase of normal operation, it may be necessary to bring classified material to the site by courier.

105. APPROVAL. The existence of COMSEC devices on ARSR-4 sites and the presence of classified and other sensitive information influence some of the site security requirements. Review, inspection, and/or approval of installation and operating procedures may be required by cognizant security organizations (Air Force Cryptologic Support Center and NSA).

106.-109. RESERVED.